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AUTHOR Klein, M. Frances
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ABSTRACT

This handbook is intended for those persons who have the responsibility for selecting learning materials for student use. The primary emphasis is on learning materials intended for wide distribution, such as those produced by commercial publishers. An annotated listing is provided of approximately 40 resource publications dealing with the identification and evaluation of instructional materials. Problems in developing and evaluating learning materials, as well as major issues in the instructional materials field including the curriculum reform movement, are discussed. Appended is an article by Richard I. Miller entitled "Selecting New Aids to Teaching." (Author/STS)

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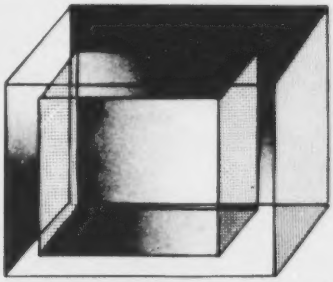
Association for Supervision and Curriculum Development

ABOUT LEARNING MATERIALS

M. Frances Klein

Foreword by Elizabeth S. Randolph



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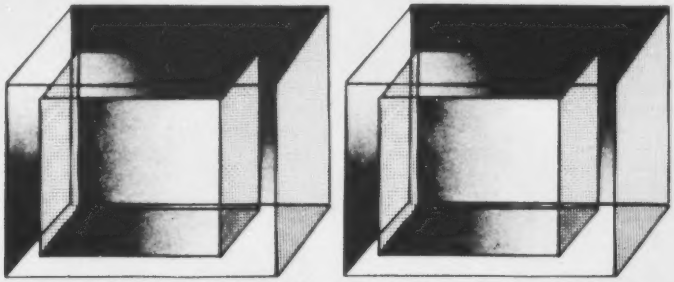

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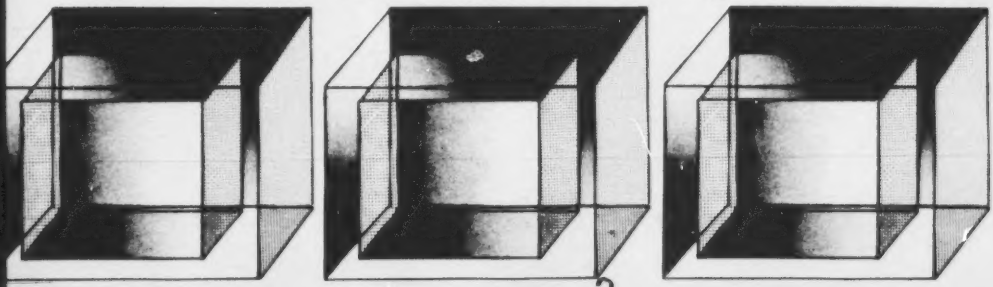

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Foreword

To classroom teachers or curriculum supervisors who find themselves drowning in a sea of learning materials, Frances Klein has thrown a much needed lifeline in this publication. Admitting that much of what she has included can be found elsewhere, she has condensed and synthesized information into a useful handbook which brings together, under one cover, resources that would require hours of research to find.

"Learning materials" refers to anything used by students in the process of acquiring knowledge, be it produced by God (ant-hills?) or Government (Guide to the Metric System). The author's prime concern, however, is with materials produced by commercial agents, intended for wide distribution.

Faced with the task of choosing what is *appropriate* from the super abundance of learning materials which flood the market, the educator must first identify what is available that fits his/her purpose. This the educator can do by reference to publishers' catalogs, to the ads and reviews in professional journals, to displays at conferences, teachers' meetings, etc., and above all, to publications with a primary focus on learning materials. Dr. Klein lists and describes some two dozen such publications. Most of the latter not only help identify materials, but also include carefully prepared assessments of same . . . one resource for evaluating quality. Had she done nothing other than collate these lists, the author would merit our thanks.

But she has done more. She discusses at length the problems involved in developing and evaluating learning materials. Samples: What shall we teach? (sex education? communism?); how can we define "good" quality?; how can we design research methodology so that not only cognitive growth but affective and psychomotor growth/skills can be tested?; can publishers be held accountable for their products through the process of learner verification and revision (LVR)?; is it realistic to expect a set of learning materials to have the same predictable results when used under different socio-economic and geographic conditions?

Perhaps the paramount problem is the question of who is responsible (accountable) for the learning—intended or unintended—which ensues from the use of given learning materials. Since the teaching/learning process depends so heavily on the quality of the teacher plus the motivation of the student, the whole area of developing and evaluating learning materials becomes achingly complex.

Finally: Who will decide what materials will be used in classrooms throughout the nation? Everybody wants a part in the decision making: the federal government, state education agencies, local school districts (parents, Boards of Education, etc.), teachers' organizations, and of course, individual teachers and students. Trying to give everyone a piece of the action will critically influence the future development of learning materials.

The curriculum reform movement of the '60-'70 decade, responsible for the massive production of learning materials, is discussed by the author as background for her consideration of the future of learning materials production. Predicting that they can become "more plentiful and of better quality than educators dreamed of a few years ago," Dr. Klein ends on an optimistic note.

Thank you, Frances Klein, for the lifeline.

ELIZABETH S. RANDOLPH, *President, 1977-78*
Association for Supervision and
Curriculum Development

M. Frances Klein is Director of the Curriculum Materials Center and Professor of Education at Pepperdine University in Los Angeles, California.

ACKNOWLEDGMENTS

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1. About This Handbook

The development and evaluation of learning materials is a field within curriculum and instruction which has been receiving increased interest and study within recent years. Although the concern for learning materials has always been present in the history of education, many more people are now becoming aware of the importance of this field of educational activity. This publication is intended for those who have an interest in and responsibility for evaluating and selecting learning materials designed for students to use. Much of what is included here exists elsewhere, but to find it all would require reading many sources. I have tried to condense and synthesize the available literature into an introductory handbook. It is not an exhaustive treatment of any single aspect and clearly represents my summary and interpretation. You are encouraged to go directly to the sources I have used and to others which you may find as you pursue this field of educational endeavor.

I use the term "learning materials" throughout the handbook, since my intent is to emphasize what the products are designed for—to help students learn. The phrase refers to any materials made available to the student during the learning process. I could have used a broader phrase often found in other publications, "curriculum and instructional materials." However, I consider curriculum and instructional materials to include learning materials as defined here, as well as curriculum plans, guides, and suggested activities designed for teachers to use in getting students involved in learning. The information and resources contained in this handbook can be applied to evaluating both. The primary focus here, however, is on the materials designed for student use.

Learning materials are produced by a variety of sources such as commercial publishers, governmental agencies, professional associations, school districts, research and development laboratories, business corporations, individual teachers, students, and parents. The prime concern here is with learning materials intended for wide distribution such as those produced by commercial publishers.

This handbook should be useful to a number of different audiences. Teachers, parents, directors of curriculum, and any others with an interest and responsibility in the evaluation and selection of learning materials should find the resources identified in Chapter 2 helpful to them. Perhaps curriculum researchers will find some of the problems identified in Chapter 3 challenging enough to investigate. Professors of curriculum who believe their students should develop skills in evaluating learning materials should find both the resources and the problem areas useful for their classes. Publishers also might find the resources and problems identified worthy of consideration as they engage in planning and producing future learning materials. Finally, any person interested in the learning materials used in our schools might find this brief overview useful for becoming better informed and better able to take action.

The chapters which follow are arranged to begin with the practical aspects of selecting and evaluating learning materials and move to more theoretical considerations. Chapter 2 contains some resources for identifying what learning materials exist on the commercial markets and for evaluating them. Chapter 3 identifies some major problem areas and suggests the impact current actions may have upon the development of future learning materials. Some of the major forces contributing to the development of this field of study are discussed in Chapter 4.

A Caution

Quality materials alone will not assure learning. The complexity of the classroom setting and an incomplete understanding of the learning process make it impossible to isolate the contribution of quality materials to the learning process. We know that students learn from more than just learning materials. They learn from the teacher, from the peer group, and from many other sources. Therefore, to put complete reliance upon materials is misplaced hope and faith. But while too much should not be expected of materials, neither should their impact be minimized. The materials selected for use are a basic component in the curriculum. They are enormously important in shaping what students learn. What must be kept clearly in mind is a set of realistic expectations of what learning materials can do and cannot do.

2. About Present and Needed Resources for Identifying and Evaluating Learning Materials

The National Information Center for Educational Media advertises that the indexes which they publish provide access to a half million annotated audio-visual titles.[1] This claim suggests the huge quantity of learning materials available on the commercial market. As the profusion of catalogs from publishers is studied, displays of materials at conferences visited, and media and materials libraries explored, the overwhelming amount of learning materials begins to be evident. No teacher can complain about the lack of available materials any longer.

For almost any goals and objectives stated in curricular plans, materials are available on the commercial market which were carefully designed to help students achieve them. No longer does the classroom teacher have to develop from scratch the materials needed for most learning tasks. Now finding appropriate materials is the major activity, and this activity can be defined in terms of two tasks: first, to identify what currently exists in any specific area of the curriculum and, second, to evaluate the materials so that a judgment can be made as to how good they are for teacher and learner. A variety of resources exists which will help in these two tasks.

Resources for Identifying Materials

One readily available source for identifying what materials exist is the publishing companies themselves. Advertisements of the latest materials are very accessible and often appear in school mailboxes unsolicited. These advertisements and catalogs from publishers can become a very informative source regarding what learning materials are available.

The publisher's representative is eager to talk to prospective customers and is well-prepared to inform them about the company's products. He or she can highlight the strengths of the products and will sometimes demonstrate or conduct workshops on how to use the materials. Some pub-

[1] National Information Center for Educational Media, University of Southern California, University Park, Los Angeles, California 90007.

lishing companies make available sampler kits of specific programs upon request, and these kits will provide a hands-on experience with the components included. The complete set of materials is sometimes made available for a limited time. This provides an even better opportunity for careful scrutiny of the product.

It should be recognized, of course, that advertisements and representatives are trying to sell you a product. While most publishing companies want to be honest about their products, remember that they do reflect a biased opinion.

Another resource for identifying learning materials is professional journals published by educational organizations: *The Arithmetic Teacher, Educational Leadership,* and *English Journal,* for example, include advertisements about the latest materials from publishers. Some of these journals, such as *Social Education,* also include reviews of learning materials as a regular feature. These reviews provide more systematic and objective information about materials than do the advertisements.

Actual collections and displays of materials are another rich resource for finding out what is available. Local schools, school districts, and intermediate agencies such as county education associations have collections of selected materials. State agencies often make materials available for examination. Such collections may include only state-recommended materials or may contain all the materials which were submitted by publishers for consideration by state agencies. Workshops and conferences at the state and national levels also provide opportunities for viewing the newest materials.

One of the largest displays of materials is brought together at ASCD's Annual Conference held each year in March. Other conferences held by groups with specific subject matter interests, such as the National Council for the Social Studies and its state affiliates, usually sponsor displays of materials. Many colleges and universities which have teacher education programs maintain special libraries of learning materials. These collections are often available for examination by educators and lay people even if they are not enrolled as students at the institution.

A variety of publications, which might be considered directories, is a fourth resource for identifying learning materials. A number of these publications exist and each has somewhat different information included. Some include materials for only one subject field such as the *Social Science Consortium Data Books,* and others such as *Alert* select only major curriculum projects. (For bibliographical information on these and the following publications, see the annotated list immediately following this section.) The bimonthly publication, *Curriculum Review,* provides information about new textbooks and supplementary materials. *EPIEgram* provides subscrib-

ers with information about and reviews of equipment and learning materials by Educational Products Information Exchange (usually referred to as EPIE). EPIE also makes available more extensive evaluations of materials in selected subject areas such as reading, early childhood education, social studies, mathematics, and bilingual education.

Some of the major publications which have a primary focus on learning materials are:

- *ALERT, Sourcebook of Elementary Curricula: Programs and Projects.* Far West Regional Laboratory for Educational Research and Development. San Francisco, California, 1972. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

  Compilation of a selected sample of innovative curricula, training programs, model projects, and resources for pre-kindergarten through grade six. Designed to provide information on type of student and grade level, outstanding characteristics, implementation requirements, and evaluation reports. Materials were selected for review on basis of: (a) produced by research and development agencies; (b) non-R and D programs with value established in the field; and (c) programs which were not rigorously evaluated, but show internal evidence of quality and innovativeness.

- *CEDaR—4th edition Volume I* and *Volume II.* Mary Kennedy Burton, editor. Compiled by the Council for Education Development and Research, Inc., Suite 206, 1518 K Street, N.W., Washington, D.C. (Published by Commercial Educational Distributing Service, P.O. Box 3711, Portland, Oregon 97208.)

  Annual publication which includes programs and products selected from grants and contracts awarded from the Department of Health, Education, and Welfare and other agencies. Volume I provides abstracts of programs in process at research and development institutions and Volume II describes products which have not yet been published commercially. Volume II has information which includes product name, institution, principal investigator, programs, product links, target audience, product evaluation, and abstract of product.

- *Curriculum Product Review.* A Bobbitt Publication, P.O. Box 1904, Clinton, Iowa 52732.

  Publication issued nine times per year. Advertises new curriculum products from publishers. Very brief descriptions of materials given with feedback cards provided for obtaining further information.

- *Curriculum Review.* Published by Curriculum Advisory Service, 500 South Clinton Street, Chicago, Illinois 60607.

  Bi-monthly magazine which publishes reviews and evaluations of texts, professional books, and supplementary materials for grades K-12 in all curriculum areas. Reviews and evaluations written by specialists in education may vary in information contained. May include information about description, rationale, objectives, organization, methodology, physical features, additional materials available, field testing, and recommendations.

- *EPIEgram, The Educational Consumers Newsletter.* Educational Products Information Exchange Institute, 475 Riverside Drive, New York, New York 10027.

Eighteen newsletters a year highlighting news, problems, and strengths about materials and audiovisual equipment and their use in schools.

Also available are the Educational Products Information Exchange Reports. Published six times a year as a membership service, including reports on materials for individualizing math instruction, secondary school social studies (31 textbook programs), elementary and junior high science programs, basic and supplementary reading materials, how to select and evaluate beginning reading materials, and early learning kits (25 evaluations). Analyses vary somewhat from report to report. May include information on physical description, target audience, content, objectives, methodology, conditions of use, instructional design, rationale, research and development, means of evaluation, and comments by reviewers.

• *Games and Simulations for School Use.* Board of Cooperative Educational Services, June 1974.

Index to games in the following major categories: ecology, economics, career education; physical health; alcohol, drugs, and tobacco; mental health; first aid and survival; history and geography; language arts; learning disabied; mathematics; political science; science; sociology; and computer games.

• *Gaming: An Annotated Catalogue of Law-Related Games and Simulations.* Special Committee on Youth Education for Citizenship, American Bar Association, 1155 East 60th Street, Chicago, Illinois 60637.

Descriptions of games to help the reader determine if further examination is warranted. Games are described in six major subject areas: basic concepts of law, Constitution, Bill of Rights, current issues, political process, and teacher resources.

• *Guide to Simulation/Games for Education and Training.* Hicksville, New York: Research Media, 1973.

Index to current games and simulations designed specifically with an educative purpose. Complete information on 613 entries is given which meet specifications of game/simulation format. Lists 473 additional items which are out of print, in development, or for which more information was needed.

• *Guide to Teaching Materials for English, Grades 7-12.* National Council of Teachers of English: Urbana, Illinois, 1975.

(Also a 1975-76 Supplement and a 1974-75 Guide.) Designed to provide comprehensive index of available instructional materials at secondary level. Provides basic description of materials in 16 subject areas for basal series (materials for 2 or more years) and single volumes and packages.

• Hawkins, John. *Teacher's Resource Handbook for Asian Studies,* 1976; *Teacher's Resource Handbook for Latin American Studies,* 1975; *Teacher's Resource Handbook for Russian and East European Studies* (with Jon Maksik), 1976; and *Teacher's Resource Handbook for African Studies* (with Jon Maksik), 1976. Regents of the University of California, University of California at Los Angeles.

Series of annotated bibliographies of curriculum materials designed for students in preschool through grade 12. Includes materials intended to instruct American students about the various regions of the world listed in the titles.

• Hendershot, Carl H. *Programmed Learning and Individually Paced Instruction* (Fifth edition), 1973. 4114 Ridgewood, Bay City, Michigan 48706.

Index to instructional materials in programmed or self-pacing format. Updated by supplements issued periodically. Ordering information and brief description given.

• *Indexes*, available from the National Information Center for Educational Media. University of Southern California: Los Angeles.

These indexes provide access to audiovisual educational products by media format and by selected subject areas.

• *Learning With Games*. Cheryl L. Charles and Ronald Stadsklev, editors. Published jointly by the Social Science Education Consortium and the ERIC Clearinghouse for Social Studies/Social Science Education, Boulder, Colorado, 1973.

Contains the 70 analyses of games included in the *Social Studies Curriculum Materials Data Book*. Also provides resources on development and use of educational games and simulations. Information provided on overview of the materials, available materials, cost, required or suggested time, intended user characteristics, rationale and general objectives, content, procedures, evaluative comments, and suggestions.

• Lewis, Darrel R., and Donald Wentworth. *Games and Simulations for Teaching Economics*. New York: Joint Council on Economic Education, 1971.

Annotated bibliography of materials which: (a) met definition of educational game or simulation, (b) involved use of economic behavior, goals, or concepts, (c) had general educational application, and (d) was commercially or publicly available. Part III annotates games and simulation. Part IV contains list of other bibliographies.

• *Materials and Human Resources for Teaching Ethnic Studies: An Annotated Bibliography*. Social Science Education Consortium: Boulder, Colorado, 1975.

Materials about ethnic groups in the United States, selected on bases of publication date, cost, and recommendations from scholars in ethnic studies. Annotations contain a rating on format, realism and accuracy, intercultural understanding, educational quality, and overall recommendation about quality and usefulness. Bibliography also contains sections on ethnic organizations and human resources and publishers.

• *Media and Methods Educator's Purchasing Guide*. Frank McLaughlin, editor. North American Publishing Co., 134 North 13th Street, Philadelphia, Pennsylvania 19107.

Annual guide designed to assist in the pre-adoptive search and selection process. Contains information from every known supplier of educational materials and equipment. Part I is an index to basic publishing and advertising information about educational materials. Part II focuses on educational equipment and supplies.

• *A Mexican-American Bibliography: A Collection of Print and Non-print Materials*. The Mexican American Curriculum Office, Toledo Public Schools,

Manhattan and Elm Streets, Toledo, Ohio 43608. Produced by Xerox, University Microfilms: Ann Arbor, Michigan 48106.

Bibliographical information on materials which are addressed to the history, heritage, pride, and contributions of Mexican Americans.

• *Tenth Report of the International Clearinghouse on Science and Mathematics Curricular Developments.* Joint Project of the American Association for the Advancement of Science and the Science Teaching Center, University of Maryland, 1977.

Comprehensive annual report of new science and mathematics curricula from many countries. Provides brief description of project, personnel, history, headquarters, support, objectives, methods of instruction, age/grade level, materials available and being produced, language of materials, teacher preparation, facts on project implementation, evaluation, publicity, and plans for future.

• *Social Studies Curriculum Materials Data Book.* Social Science Education Consortium, Inc.: Boulder, Colorado, 1977.

Three volumes containing analyses of curriculum materials in the social studies. Designed to assist educators to select materials appropriate to their students, school, and community. Answers questions concerning what is available, physical description, cost, time required for use, students the materials are designed for, special training of teachers, authors' intent, content, teaching methodology, effectiveness, and evaluation. Selections based on: (1) availability, (2) accessibility of complete set of materials to Consortium Staff, (3) expertise of Consortium Staff, and (4) advice and help from Consortium Membership. Data book updated twice a year and data sheets on projects revised as necessary.

• Stadsklev, Ron. *Handbook of Simulation Gaming in Social Education.* Part I: *Textbook*, and Part II: *Directory*, 1974. Institute of Higher Education Research and Services, University of Alabama, P.O. Box 6293, University, Alabama 35486.

Volume I contains information on the what, why, and how of the theoretical aspects of gaming. Section on Evaluating Materials includes chapters by Judith A. Gillespee, "Evaluating Materials" (pp. 66-87) and Little Mac (Measuring Analytical Components) by Ron Stadsklev. Stadsklev presents GAS (Games Analysis System). Raises questions in areas of observable factors and judgmental factors. Part II, the *Directory*, gives answers to question of where the materials may be found. Updated by bimonthly magazine, *Simulation/Gaming/News.* Describes and evaluates current social studies materials in game format. Information provided on source, date of publication, grade level, cost, time required, participants, description, comments, and suggestions.

• Superka, Douglas P., Christine Ahrens, and Judith E. Hedstorm with Luther J. Ford and Patricia L. Johnson. *Values Education Sourcebook.* Social Science Education Consortium: Boulder, Colorado, 1976.

Provides information about materials available for teaching about values and characteristics of specific materials. Analyzes 84 sets of materials and contains extensive annotated bibliography of resources. Describes each project and provides analytical information on rationale, objectives, content, and proce-

dures. Materials selected as a result of a survey of what was generally available. Bibliography contains materials discovered after project was completed.

• Troyen, Donald L., Maurice H. Kellog, and Hans O. Anderson. *Sourcebook for Biological Sciences*. Macmillan: New York, 1972.

Annotated bibliography of resources for teachers of biological science. Includes learning materials, curriculum projects, evaluation instruments, facilities and equipment, and professional associations.

Resources for Determining Quality

After identifying the learning materials available, the next major task becomes determining how good they might be for use in a specific school district or by a specific teacher and student. Several resources are available to help in evaluating and selecting learning materials.

Many of the publications on the preceding list would be a useful resource. The *Social Science Consortium Data Books, ALERT,* issues of *Social Education, Curriculum Review,* and publications of EPIE are examples. These publications do more than simply help identify materials; they include carefully prepared assessments to which educators can turn as one judgment of quality.

There are some limitations, however, to the usefulness of these published reviews. Each of these publications will differ in the extent to which the information provided is of a descriptive nature or is an evaluation of the materials. The bases used for evaluation also vary among the publications, which makes it difficult to compare learning materials reviewed in several publications. A different set of standards may have been used in each review. With these limitations clearly in mind, however, the above publications can be a resource for helping to determine the quality of materials.

It is very possible that the published evaluations or reviews do not contain enough detail to be useful for making a decision about a specific situation, or they may not contain any information on the specific program that is being considered. It then becomes a task for someone at the local district or school level to evaluate those learning materials. In order to engage in this task, some standards or criteria are needed. A number of authors have carefully formulated criteria to use in evaluating learning materials.

The sets of criteria can be divided into two major types—procedural and substantive. The procedural criteria help the user to answer questions about designing the processes to use as materials undergo evaluation. These include criteria by which the processes of setting up committees, pro-

cedures, and responsibilities for evaluating materials can be studied and improved. Substantive criteria provide the user with some criteria which can be applied to the materials themselves.

Some of these substantive criteria have been developed for special kinds of materials. For example, Henderson focuses upon educational games and simulations; Rinne upon materials designed to teach human relations; Rosenberg upon the degree of bias or stereotyping present in the materials; and Morrissett and Stevens upon materials in social science education. (See following section for bibliographical information on these publications.) Although these criteria have been developed with a very specific focus, some of them have a considerable amount of generalizability to other types of materials. Other sets of criteria have a broader focus and presumably can be used with a more general format and any subject matter.

The following annotated list contains some of the major publications and audiovisual programs available now for determining the quality of learning materials. Sources cited here are largely available through national circulation. Others can usually be obtained at state and district levels through appropriate agencies.

• Banks, James A. "Evaluating and Selecting Ethnic Studies Materials." *Educational Leadership* 31:593-96; April 1974.

Identifies criteria and examples of materials to help evaluate and select ethnic studies resources. Criteria include: 1. Accurate portrayal of perspectives, attitudes, and feelings of minority groups; 2. settings and experiences with which all students can identify and which accurately reflect ethnic cultures and life styles; 3. illustrations which are accurate, ethnically sensitive, and technically well done; 4. free of racist concepts, clichés, phrases, and words; 5. historically accurate; 6. comprehensive in terms of groups included and events discussed; and 7. discuss major events and documents related to minority history. In addition, the teacher should determine age level, interest and reading level, type of classroom situation, and how each resource will be used.

• "Criteria for Selection of Single Items of Equipment and Materials" (p. 28) and "Criteria for Selection of Packaged Instructional Materials" (p. 29). *Selecting Educational Equipment and Materials for Home and School.* Washington, D.C.: Association for Childhood Education International, 1976.

First set of criteria contains five broad categories of considerations: safety, durability, adaptability, accountability, and facilitation of growth in intellectual, physical, and social/emotional domains. Second set of criteria lists 14 questions to be answered regarding components, cost, characteristics of students, time, instruction, areas of growth, motivational factors, individualization, integration of experiences for use in future learning, discrepancies between advertising claims and staff evaluation and reactions. Part III of the publication is an annotated list of distributors and manufacturers of equipment and materials who responded to the survey of the organization.

• *Criteria for Teaching Materials in Reading and Literature.* Task Force on Racism and Bias in the Teaching of English. National Council of Teachers of English; 1111 Kenyon Road, Urbana, Illinois 61901, November 26, 1970.

Seven criteria are named which focus upon the style, subject matter, illustrations, photographs and dialects in anthologies. Designed to help select materials which will portray non-white minorities in an accurate and in a balanced way.

• Davison, Dorothy, Chairman. "Evaluating Curriculum Guides." Reprint from *English Journal,* September 1968, pp. 1-8.

Report of a committee appointed to review curriculum guides. Identifies strengths of guides analyzed (clarity of objectives) and weaknesses (do not integrate English instruction, give little guidance in assessment and evaluation, little help provided to teacher in decision making, and lack of differentiation of instruction, for example). Presents the guidelines used for analysis. Includes criteria on philosophy and objectives, content, instructional methods, assessment and evaluation, and design of the guide.

• Eash, Maurice J. "Developing an Instrument for Assessing Instructional Materials." *Curriculum Theory Network,* Monograph Supplement, 1972, pp. 193-220. Also in: Herbert J. Walberg, editor. *Evaluating Educational Performance: A Sourcebook of Methods, Instruments, and Examples.* Berkeley, California: McCutchan Publishing Corporation, 1974.

Instrument contains criteria in four major categories: Objectives, organization of materials (scope and sequence), methodology, and evaluation. Also provides a comment section allowing reviewer to identify strengths and weaknesses of materials. Each category asks for a global rating of materials. Also reports a research study conducted on agreement of reviewers using the instrument.

• Henderson, Bob H., and W. G. Gaines. *Simulation Evaluation Form.* Department of Social Science Education, 218 Aderhold Hall, University of Georgia, Athens, Georgia 30601, April 1971.

Provides information about physical description and open-ended comments about simulations. Specific analysis criteria include comments on adequacy and clarity of directions, objectives, debriefing, evaluation, physical make-up, cost, math and reading requirements, usage requirements or recommendations about time and space, alternative versions, appropriateness for students and adequacy of simulation to the true-life model.

• *Instructional Product Selection Kit.* Southwest Regional Laboratory (SWRL) Educational Research and Development, 4665 Lampson Avenue, Los Alamitos, California 90720, 1975.

A multimedia kit designed for workshop use. Participants are trained to deal with criteria about outcomes, assessment materials and procedures, reports of previous use, instructional materials and procedures, orientation and training for installation of product, reporting, and time and cost.

• Klein, M. Frances, and George D. Thayer. *Selecting Curriculum and Instructional Materials.* Regents of the University of California: Los Angeles, 1973.

An audiovisual program with self-instructional guide. Eleven questions are identified which need answers for systematic selection of materials. Criteria include categories dealing with objectives, appropriateness, role of teacher, effective use, content, activities, evaluation, price, and special conditions.

• Kurfman, Dana G. "Choosing and Evaluating New Social Studies Materials." *Social Education* 36 (7): 775-82; November 1972.

Presents two teacher evaluation forms, one for preliminary teacher evaluation and another for teacher evaluation after classroom tryout. The preliminary form includes sections on the relevance of materials to teacher objectives, effectiveness in accomplishing the objectives, probable interest of students, level of difficulty, and cost. The evaluation form for after try-out includes descriptions of situations in which materials were used, students who used materials, time consumed, effectiveness, amount of student participation, and willingness to use materials again next year. Student evaluation form also included. It asks student to rate materials on interest, value, how much learning occurred, difficulty, recommendation of whether materials should be used again next year, and a description of what student thinks he or she learned from the material.

• Miller, Richard I. *Selecting New Aids to Teaching.* Association for Supervision and Curriculum Development: Washington, D.C., 1971.

Maps out a procedure by which evaluation and selection processes can be planned and studied. Identifies five major steps: initial probing of materials or unit of instruction, developing a plan of action, accomplishing the plan, making the decision, and revising and recycling. Raises questions about who will make decisions, community and personnel factors, curricular and instructional factors, evaluation procedures, cost and implementation factors.

For complete text of this document, see Appendix A of this booklet.

• Morrissett, Irving, W. W. Stevens, Jr., and Celeste P. Woodley. "A Model for Analyzing Curriculum Materials and Classroom Transactions." Chapter Eight in: Dorothy McClure Fraser, editor. *Social Studies Curriculum Development: Prospects and Problems.* Thirty-ninth yearbook of the National Council for the Social Studies. Washington, D.C.: NCSS, 1969. pp. 229-76.

System contains criteria in six major categories: descriptive characteristics, rationale and objectives, antecedent conditions, content, instructional theory and teaching strategies, and overall judgments. Chapter also reports how the system was developed and the variety of situations in which it has been used.

• Payne, Arlene. *The Study of Curriculum Plans.* Washington, D.C.: National Education Association, Center for the Study of Instruction, 1969.

Presents guidelines for evaluation in the first section and an analysis of a guide using the criteria in the second section. Plan of analysis includes a differentiation as to whether the curriculum plan is descriptive or evaluative in nature. Criteria for descriptive guides are at two levels of planning, general and specific. At the general level of planning, questions are raised concerning curriculum organization, goals, beliefs about learning, and evaluation. Each of these is examined regarding the justification for decisions about them and the form in which the decisions are presented. At the specific level of planning, nine questions are raised with emphasis on the local situation. Questions center upon organization and sequence, subject matter, activities for students, activities or

methods for teacher, learning objectives, and evaluation. Clarity and internal consistency are named as two evaluative criteria which must be used in any descriptive analysis. Criteria for evaluative analysis include questions regarding the view of curriculum planning as an organizational process, learning and instruction, and models or rationales which identify types of curricular decisions and their relationships and bases.

• Rinne, Carl H. "Criteria for Evaluating Curriculum Materials in Human Relations." *Educational Leadership* 32:37-40; October 1974.

Suggests six criteria for judging potential effectiveness of instructional materials in human relations. Materials should provide for: performance of a task by learner, opportunity for the learner to experience consequences from his or her performance or consequences which can be viewed in context of a larger concept or model of interaction, repetition of experience when appropriate, protection from undue threat and emotional pain, and encouragement for students to relate exercise behavior to real world constraints.

• Rosenberg, Max. *Criteria for Evaluating the Treatment of Minority Groups in Textbooks and Other Curriculum Materials.* Michigan Association for Supervision and Curriculum Development Position Paper, no date. Western Michigan University, 105 North Division, Grand Rapids, Michigan 49502. Also reprinted as "Evaluate Your Textbooks for Racism, Sexism!", *Educational Leadership* 31(2):107-109; November 1973; and as chapter five in *Eliminating Ethnic Bias in Instructional Materials: Comment and Bibliography*. Washington, D.C.: Association for Supervision and Curriculum Development, 1974.

Identifies 20 questions which focus upon the content and illustrations of textbooks and other curriculum materials. Criteria try to assess degree to which materials portray minority groups in fair, accurate, positive, objective, and valued presentations in past and present society.

• *Instructional Materials: Selection and Purchase.* National Education Association and Association of American Publishers. Washington, D.C.: National Education Association, 1976.

Identifies 14 recommendations for developing selection procedures. Recommendations are in areas of the legal and administrative setting for selection, organizing for selection, selection processes, and guidelines for expenditures. Charts procedures for selection and purchase of instructional materials.

• *Sharper Tools for Better Learning.* National Association of Secondary School Principals, 1904 Association Drive, Reston, Virginia 22091, 1973.

Describes importance of training selection committee and identifies areas by which a school system might organize criteria to be used. Suggests criteria in areas of administrative requirements, curricular requirements, pedagogical requirements, and evaluation requirements. Also discusses how to refine and systematize examination and review procedures, pilot use and testing procedures, and expectations about improving materials through learner verification and revision.

• Tom, Alan. *An Approach to Selecting Among Social Studies Curricula.* Central Midwestern Regional Educational Laboratory, 10646 St. Charles Rock Road, St. Ann, Missouri, 63074, 1970.

Discusses a model for curricular decision making focusing primarily upon curricula for citizenship education. Although the intent of the model has a broader purpose of focusing upon the school situation in which materials are to be used, some questions deal directly with selection of materials. Analytical questions in the model are categorized into clarification of intent, logical analysis of intents, strategies and materials, curricular intent, making value judgments, curriculum evaluation, validity of content, and implementation issues.

• Tyler, Louise L., M. Frances Klein, and associates. *Evaluating and Choosing Curriculum and Instructional Materials.* Educational Resource Associates, P.O. Box 415, Glennville, California 93226, 1976.

Discusses 28 recommendations to be considered in evaluating and choosing learning materials. Recommendations are grouped broadly into seven categories: rationale, specifications, appropriateness, effectiveness, conditions, practicality, and dissemination. Includes chapters on the use of recommendations in research, organizing a curriculum, and reactions of a publisher.

• Tyler, Louise L., M. Frances Klein, and Ruby Takanishi. *Inner Teaching: Mastery in Selecting Classroom Materials.* Educational Resource Associates, P.O. Box 415, Glennville, California 93226, 1977.

Selects 15 tips from 1976 publication by Tyler, Klein, and associates. Presentation directed primarily to the classroom teacher. Criteria include statements about objectives, cost, evaluation, field-testing, special facilities, and care of materials, revision, learning opportunities, teacher skills, and content. Also demonstrates the process of using the criteria, and discusses how to open up the instructional and selection processes.

There are some general areas of agreement among many of the authors about what criteria are important. Several mention, for example, the importance of clearly stated objectives, various aspects of appropriateness such as age or grade level, the need to evaluate how well the students learn from the materials while they are still in developmental stages, and the role of the teacher in using the materials. There are criteria, however, that are unique to each of the authors. This seems to suggest that there is no agreement as to how certain criteria contribute to quality materials. While this may represent real disagreement to some degree, given the recent appearance of many of the publications, it may be due more to the newness or the developmental nature of the criteria by the various authors than to real disagreement among them.

The sets of criteria have varying degrees of research and validation behind them. A few authors have reported results of their research. For example, Eash conducted research on his criteria to determine the consistency of raters in using them to evaluate material. Tyler and Klein, in their 1976 volume, report research regarding the application of their criteria to a set of materials and how the perceptions of materials are affected, if at all, by the interactions of teachers, students, and materials in

classrooms. They also report on several uses to which their criteria have been put: in the development of materials by a producer, in the formative evaluation of materials by a researcher, and in the organization of a curriculum materials library. Some other sets of criteria appear to be largely the opinions of the authors (all of whom are respected educators, however) with little or no research available to validate how well they contribute to selecting quality learning materials. This lack of research is cited as a major problem area of the field in the next chapter.

While these publications are a valuable resource in determining how good learning materials are, it should be made clear that in no case will simply applying any of these sets make a decision for anyone. What they will do is provide information upon which to base a judgment. Using a set of criteria increases the likelihood that the decision will be a rational, well-informed one rather than mainly a spur-of-the-moment or intuitive decision. Human judgment still plays a major part in the decision, however, even after applying the criteria.

Needed Resources for the Future

Information on the preceding pages suggests some of the major resources which are now available to help educators or any other interested persons identify what learning materials exist and determine their quality. These tasks would be made much easier, however, if other resources are developed in the future.

One resource which needs to be developed is a validation and synthesis of the various sets of criteria cited in the preceding section. Research is needed to determine whether each criterion is related to the learning process. This will require creative and systematic research as learning materials which are rated highly on the various criteria are actually used in a variety of classroom settings and with different types of students and teachers. A synthesis of those criteria which are identified through research as being significant in contributing to learning can then become the basis of several comprehensive systems from which interested people can choose as they prepare to evaluate learning materials. This would be an invaluable asset for all those who must engage in evaluating and selecting learning materials. It is possible, for example, that some of the criteria developed by Morrissett and Stevens for evaluating social studies materials could be combined with some by Banks for ethnic studies, Rinne on human relations, and Rosenberg for evaluating the treatment of minority groups into a comprehensive set of standards for evaluating social studies materials. (See preceding section for bibliographical information on these publica-

tions.) The criteria to be included in this comprehensive set of standards would need to be identified through research as being significant contributors to learning.

A second much-needed resource is a Learning Materials Yearbook. This resource could index the major learning materials produced during that year. The materials would be evaluated by reviewers, perhaps similar to the way tests and other assessment instruments are in the *Mental Measurements Yearbooks*[2] or as the Center for the Study of Evaluation rates tests available for use in early childhood education, elementary schools, and secondary schools.[3] It would be difficult, if not impossible, to include every set of learning materials currently available. What might be feasible, however, would be to establish a central clearinghouse where producers and publishers would send a set of any newly developed materials which were ready for distribution. These materials could then be inventoried, cited, and evaluated in an annual Learning Materials Yearbook. Such a publication would be a resource of great value to many people.

[2] Oscar K. Buros, editor. *Mental Measurements Yearbooks.* Highland Park, New Jersey: Gryphon Press.

[3] Ralph Hoepfner et al. *CSE-ECRC Preschool-Kindergarten Test Evaluation.* Los Angeles: UCLA Graduate School of Education, Center for the Study of Evaluation, 1971; Ralph Hoepfner, editor. *CSE Elementary School Test Evaluations.* Los Angeles, UCLA Graduate School of Education, Center for the Study of Evaluation, 1970; and Ralph Hoepfner, editor. *CSE-RBS Test Evaluations.* Los Angeles: UCLA Graduate School of Education, Center for the Study of Evaluation, 1972.

3. About Some Problems in Developing and Evaluating Learning Materials

There are few, if any, completely agreed upon answers which can be given to the problems being confronted today in the planning and implementation of curricula. Curriculum specialists disagree on fundamental curricular questions such as how to state behavioral objectives or if they should be used at all in curriculum planning. Segments of the lay public challenge decisions made regarding the curriculum such as what literature will be used in the classroom and whether such topics as sex education or communism will be taught.

Teachers who must confront daily and long-range curriculum and instructional decisions often feel ill-equipped to make such important decisions. What reading materials should be used, how long should physical education be taught, and what is the best method for teaching history are examples of questions that teachers face and about which they often wish they could make a better informed decision.

Enlightened administrators attempt to provide leadership in making curricular decisions where basic values and beliefs of people are in conflict. Administrators often are called upon to resolve differences of opinion, such as when a teacher is convinced that a student needs to learn a certain thing in a certain group and the child's parents disagree. Students have their opinions, too, and say in many ways that the curricula being offered to them are not meeting their needs. They tell us this by dropping out of school, by not accepting responsibility for their homework, and by their obvious boredom in the classroom.

The research base for resolving these kinds of curricular problems is limited, at best. The emerging field of developing and evaluating learning materials has even more limited research findings on which to base solutions to some of the problems. As with so many other areas in education, decisions must be made and action taken even though little definitive research is available. Those involved in developing and evaluating learning materials are currently grappling with at least five major problem areas. The ways in which these problem areas are resolved may have significant

impact upon the direction this field of study takes and upon the kinds of learning materials we will have available in the future.

One major problem of the field centers on what characteristics of learning materials can be used to define quality. Everyone wants students to learn from "good" materials, but there appears to be limited consensus about what quality materials are. The criteria currently available for determining quality were cited in Chapter 2 and the need for research on them was identified. These criteria may not yet be comprehensive enough, however, for determining quality. Others may need to be added. For example, there are some criteria which developers have used for years that are not emphasized by the authors referred to in Chapter 2, such as the fidelity of color and sound reproduction, how well the narrative holds together, appropriate use of media, and clarity of communication. Other criteria not now in existence may also be important. Research is badly needed to help identify quality materials in a comprehensive way. The research must be planned and conducted to discover how well the materials help students learn what is intended. From this research, several comprehensive sets of criteria which adequately define what quality materials are might be developed.

A second major problem of the field is the way in which research on learning materials needs to be conducted in order to obtain needed answers. Much of the reported research to date has utilized the traditional control-experimental group design in studying the various aspects of learning materials. A test-teach-retest model is often used, for example, in verifying what students can learn from the materials. This procedure appears to be effective for materials which are intended to help students develop cognitive behaviors. If one wishes to verify what students learn from materials developed to teach syllabication rules, phonetic analysis of words, sums of numbers up to 20, or multiplication tables, traditional procedures can be of value in developing answers. Research using this kind of methodology is generally acceptable to most educators.

Cognitive growth has been and will continue to be a major concern of schooling, and quality learning materials are needed to help achieve this. It is not, however, the only concern of the curriculum. Growth is desired in affective and psychomotor behaviors and materials are needed to help achieve this, too. The research methodology utilized for studying questions related to materials may need to differ quite significantly when cognitive skills, psychomotor skills, affective growth, or some combination of these is the major focus of the learning materials.

Research on materials dealing with cognitive skills may more easily lend itself to paper and pencil instruments yielding quantitative data (a

traditional way of testing). Other research methodologies such as skilled and systematic observation or interview procedures, may be needed for materials dealing with affective concerns such as values, interests, and feelings. For example, social studies materials which are designed to develop empathy for others, appreciation of other cultures, and value clarification will require more than a written test to assess their impact. Such materials will require observation of students informally in the classroom and on the playground. They will require interviews of students to determine how clear students are about the values they hold. This type of research is often not used for several reasons: cost, difficulty in establishing reliability of the data obtained, and problems in summarizing and interpreting the data. These methods are also less acceptable to many educators who are concerned with educational research. Unless this type of methodology is encouraged and accepted, it is possible that materials needed for a wide variety of curricular goals and objectives in the affective area of human behavior will either not be available in the future, or their quality may be in doubt.

The traditional methodology also restricts research on other aspects of learning materials. It tends to overlook or to account inadequately for such factors as antecedent conditions to learning and the context variables in operation while implementing the materials. Varying antecedent conditions such as the type of community and attitudes of the parents and context variables such as attitudes and skills of teachers and support of the administration may significantly affect learning in different ways when the same set of materials is in use. It may be impossible to adequately control enough of the significant variables involved in learning so that materials can become the single variable to study. Therefore, research methodologies other than traditional techniques to study materials in the classroom will be required. If problems on all aspects of learning materials are to be comprehensively studied, there must be an array of research methodologies used and accepted.

Learner verification and revision (commonly referred to as LVR) is the subject of such controversy that it could be considered a third major problem in the field. LVR refers to procedures used in evaluation processes during product development and continuing after a product has been released on the market. It is being advocated particularly by Kenneth Kosmoski, President of EPIE.[1] Although a single definition of these procedures has not been accepted, most are similar to the one given by the Florida State Instructional Materials Council: ". . . the empirical process of data-

[1] See, for example: Kenneth P. Komoski. "Learner Verification: Touchstone for Instructional Materials?" *Educational Leadership* 31: 397-99; February 1974.

gathering and analysis by which a publisher of curriculum materials has improved the instructional effectiveness of that product before it reaches the market and then continues to gather data from learners in order to improve the quality and reliability of that material during its full market life."[2] It is generally viewed as an attempt to hold publishers accountable for their products.

Laws and policies regarding LVR have been enacted by at least two states (California and Florida) and similar requirements are being considered by other states. California and Florida now require publishers to show evidence that their products meet requirements of learner verification and revision when they are submitted for state adoption or recommendation. Exactly what form this evidence can take to be acceptable is not clearly defined. This requirement is causing considerable confusion for publishers and educators.[3] Does it require, for example, evidence which is collected from students under rather carefully controlled conditions or will the testimony of teachers and students as to the effectiveness of the materials be acceptable? If it means the former, what type of research methodology will be acceptable? With such vagueness as to how the concept of LVR is to be made operative, it is not surprising that publishers are reacting to legal requirements about it with considerable reservations, if not hostility. It is apparent that some publishers have engaged in similar procedures in the past. What they are resisting are the current efforts to mandate these procedures legally.

Part of the controversy regarding LVR centers on the type of materials to which it should be applicable. The Model Legislation Project explored the legal ramifications of the concept of LVR and recommended that the LVR procedures not be applied to all educational materials, but only to instructional materials.[4] Instructional materials were defined as materials designed specifically for acquiring and developing knowledge or skills. Hilton, on the other hand, believes that it is not appropriate to hold textbooks accountable and thus subject to LVR requirements since schools spend less than one percent of their budget on them and not a great many of them are purchased. He states that texts are only a tool for the teacher

[2] *Guidelines for the State Instructional Materials Council,* Tallahassee, Florida, May 2, 1975.

[3] The history of the legal requirements of LVR for California and Florida and some of the difficulties stemming from this ambiguity are reported in: "Quality Control for Instructional Materials: Legislative Mandates of Learner Verification and Implications for Public Education." Reprint from *Harvard Journal on Legislation* 12: 511-62; June 1975.

[4] Hannah N. Geffert, Robert J. Harper, II, and Daniel M. Schember. *Alternative Model Learner Verification and Revision Statutes.* Model Legislation Project. Washington, D.C.: Lawyer's Committee for Civil Rights Under Law; no date. p. 3.

to use and the teacher should be viewed as the significant factor in the learning process.[5] Textbooks would be seen by most people, however, as basic instructional materials and thus, in the view of the Model Legislation Project, should have LVR requirements applied to them. General educational materials which may include literary works and films, however, are not usually expected to undergo LVR procedures even though they might be used in classrooms to contribute to the achievement of certain objectives. Examples of materials in this category would be books generally available from the library that are used by the teacher to augment or illustrate a concept which is being taught and general purpose films.

Another area of controversy over LVR is the need for careful consideration of how data are to be collected, reported, and used as evidence of the effectiveness of materials. How many students should be involved in the LVR process is being debated. It has been suggested that trying out the materials on a very few students, even one, would significantly improve products. This position has been challenged by some publishers who question the generalizability of such data.[6] What is learned about materials by studying a few selected students may not reveal all the possible defects and problems with the materials. To adequately field-test materials with enough students to uncover all the possible problems and blocks to learning may require many more students than has been suggested. In relation to this, many publishers fear a trend toward a "more is better" stance regarding field-testing. For example, the publisher who can claim that materials were "verified" on the largest number of students still may not have the best materials, but he or she may have the most glittering advertisement. To equate a larger sample with a better product is not necessarily an accurate assumption. Publishers believe this trend may lead to bad advertising practices.

There is also considerable fear that data reported from field-testing may be grossly misunderstood and misused by practitioners. The fact that 30 students learned a given amount of information from a set of materials should not contribute to the expectation that other students using them will learn the same thing. To ask publishers to ensure this may never be a realistic expectation. A set of learning materials may not have the same predictable results in learning when used in an inner-city school and a rural school; with a high socioeconomic group in the suburbs of Los Angeles and in a coal mining region of West Virginia; or with a racially mixed group of 30 students and a group of five white students. A more

[5] Ernest Hilton. "Accountability for Textbooks?" *Instructor*, March 1976, p. 16.
[6] Wendell Shackelford. "Consumerism, Communication, and the Demonstration of Quality in Educational Materials." *Audiovisual Instruction* 20: 35-38; April 1975.

reasonable expectation is that the publisher will provide data which describe as completely as possible the samples of students utilized in developmental activities (using characteristics such as maturity level, sex, ethnic makeup of groups, and socioeconomic status), the conditions under which the materials were used, the resulting effects of the materials upon the students, and the subsequent improvements made in the materials. These data must then be interpreted accurately by the practitioner and used cautiously in the selection process.

The Model Legislation Project has explored other facets of what will be required as LVR procedures become formalized in terms of cooperation between producers and publishers on the one hand and teachers and students on the other.[7] One facet will be increased communication between educators, particularly teachers and students, and publishers. A major concern here is protecting the privacy of students and academic freedom for teachers. Questions such as how to handle the responses of students during LVR studies and how much teachers may vary from publisher's directives during try-outs in classrooms have potential legal ramifications. Certainly, teachers and students must be protected against any aspect of an activity which might be detrimental to learning during LVR procedures. Students should not be used in field studies in any unethical way and teachers should not be asked to do something which is not educationally sound. All publishers will guard against such potential problems with any set of materials as a matter of course. If publishers are going to be required to submit evidence of LVR to state agencies, however, they must have more access to schools, teachers, and students, and it is feared that these types of problems may occur as LVR procedures increase.

After careful study, participants in a seminar on LVR identified the need for research on the concept of LVR.[8] The relationship of LVR to quality learning materials has not been clearly established and questions regarding the cost and time involved in conducting LVR studies, for example, cannot be answered with confidence. The participants questioned current legislative mandates requiring the use of a concept which is in need of further research. They also questioned whether legal requirements would be the best way to implement the concept even if research does indicate that it is a viable concept. Such legislation can inhibit the development of alternative plans and concepts which will improve the quality of learning materials.

Although LVR as a concept may have problems, it also may have some very desirable aspects. It requires that publishers study what hap-

[7] Geffert et al., *op. cit.*
[8] "Quality Control for Instructional Materials," *op. cit.*

pens to their materials as they are placed in the hands of the students and, hopefully, a variety of research procedures will be used and accepted in the process. The skilled observations of teachers could become very valuable data to publishers as well as test scores on cognitive tasks. The increased communication could mean opportunities for teachers to tell publishers at firsthand about their need and desire for new learning materials. Thus, the development of learning materials may become more of a joint effort of teachers and publishers than has been true in the past.

A fourth major problem in the field centers upon who will be responsible for the learning (intended and unintended) which results from using specific materials. No one accepts major responsibility for this. Grant made a plea for a moratorium on buying learning materials until a procedure has been set up and implemented which will eliminate any aspect of racism and sexism from them.[9] Guidelines have been or are being developed by many publishing firms to meet this responsibility.[10] Obviously, publishers do not want students developing learnings either explicitly or implicitly from their materials which contribute to the development of racism or sexism. At the same time, many publishers believe much of the responsibility for learning from materials must be placed upon the schools and individual teachers. What happens when materials are used in the classroom is out of the control of publishers, and it is in the classroom that they believe accountability for learning should be placed. Good teachers will use materials effectively and thus produce maximum learning. Conversely, good materials will not be effective in producing learning when used by an incompetent or weak teacher. Thus, publishers reason, they alone cannot be held responsible for effects of learning materials. A reasonable view would seem to be that this must be a shared responsibility with considerable thought and study expended in the future to delineate realistic expectations and responsibilities for all parties involved: publishers, teachers, and students.

A fifth major problem in the field is who will decide what materials are to be used in classrooms throughout the nation. Many groups want to help decide this. Those who support greater involvement of more diverse groups in decision making about materials talk about "opening up the schools" and making schools more responsive to their publics. Those who are less supportive of such efforts suggest that the curriculum may become subjected to censorship through the inclusion and exclusion of certain

[9] Carl A. Grant, "Racism in School and Society." *Educational Leadership* 33: 184-88; December 1975.

[10] See, for example: *Guidelines for the Fair and Accurate Representation of Women and Minorities*. Morristown, New Jersey: Silver Burdett Company, 1976.

materials, a very dangerous and unacceptable practice in a democratic society.

The federal government has become involved in this controversy. Congress recently ended all federal funds for implementing Man: A Course of Study (often referred to as MACOS), an upper elementary social science curriculum designed to help students discover what makes them human. MACOS was produced with federal funds during the curriculum reform movement and has been considered a very promising curriculum by many. It was feared, however, by some members of the House Committee on Science and Technology that this curriculum would lead students to reject the values and beliefs basic to American society. They began a campaign to cut out funds for the dissemination of MACOS. In order to avoid charges of censorship by ending funds only for the dissemination of MACOS, funds for dissemination of *all* curriculum projects under the auspices of the National Science Foundation were cut off by House and Senate Committees.[11] As a result of this action, there is a considerable amount of discussion occurring regarding the role of the federal government in producing and disseminating curricula.[12] Should the federal government have some rights and responsibility regarding what materials will be available for selection in classrooms?

State education agencies have historically played a very active role in accepting responsibility for selecting learning materials. Virtually all state departments of education have some agency which examines learning materials submitted by publishers for possible state approval. State agencies may approve only one set of materials or there may be several from which school districts in the state may choose. Very often, there is a financial incentive for districts to use approved materials through reduced prices or free distribution of them to schools. Thus, state governments have considerable authority in selecting the learning materials to be used by students.

It is possible that local school districts will become much more active in the selection process as increased decentralization occurs. Some school districts already exert a considerable amount of influence in the decision-making process regarding what materials will be used.

Community groups often want some rights and responsibilities for selecting learning materials to be used at the local level. Probably the best known case in which the local community very definitely has taken action

[11] *Education U.S.A.*, March 1975, p. 188.

[12] This controversy has been reported by ASCD's *News Exchange*, December 1975, p. 2; Peter B. Dow. "The Case for Man: A Course of Study." *Phi Delta Kappan* 57: 79-81; October 1975; and George Weber. "The Case Against Man: A Course of Study." *Phi Delta Kappan* 57: 81-82; October 1975; and Peter B. Dow. "MACOS: Social Studies in Crisis." *Educational Leadership* 34(1): 35-39; October 1976.

is Kanawha County, West Virginia. Protests there, some of them violent, centered upon some of the new textbooks in use which were thought to have the capability of undermining parental authority and were believed to be un-American, obscene, and immoral. Parents and other lay people in the community wanted to have some role in selecting learning materials and, through their protests, gained the right to do so.[13]

Some professional educators, including teachers, express the belief that the selection of learning materials is a major, if not sole, responsibility of theirs. This belief went largely unchallenged until recent years which have witnessed increased community participation in schools. Most teachers respect the concern parents have about the learning materials their children are using, but they are divided over whether parents should function in an advisory capacity or be granted decision-making authority in the selection of materials.

Teacher unions are also becoming increasingly involved in making curriculum matters a part of the negotiation process. It may well be that in future years, the union will have significant rights and responsibilities in selecting materials for use in classrooms.

Some professional organizations are very concerned about what is happening in the controversy over who will select learning materials. A publication has been issued jointly by four professional organizations that is intended to be a resource to schools which are being or might expect to be challenged about the learning materials being used.[14] This publication is designed to advise teachers and administrators on how to avoid or combat any attempts at censorship of the curriculum or materials being used. Other activities on the part of professional organizations are occurring, too. ASCD, for example, has been actively involved in the controversy over MACOS. Gordon Cawelti, the Executive Director of ASCD, represented the professional membership when the hearings of the congressional committee were being held.

A Charge To All

The resolutions of these five major problems—what is quality in learning materials, research methodologies to be used, the controversy over

[13] This controversy has been reported by *Editorial Research Reports*. September 12, 1975, p. 688; and Joseph Watras. "The Textbook Dispute in West Virginia: A New Form of Oppression." *Educational Leadership* 33: 21-23; October 1975.

[14] *Censorship: The Challenge to Freedom in the Schools*. A joint publication by the American Association of School Administrators, Association for Supervision and Curriculum Development, National Association of Elementary School Principals, and National Association of Secondary School Principals, April 1975.

LVR, whose responsibility is the learning which is intended from the use of materials, and who will determine the materials to be used—will have a significant impact upon the future development of this new and growing field in curriculum. These developments can, in turn, have a great impact upon the learning materials which will be available and used in the future. Certainly the crucial importance of the materials which are selected, determining a significant part of what our students learn in schools, mandates that all who are concerned with the process of schooling should monitor carefully the decisions being made and the resources being developed.

4. About Major Forces in the Field

Anyone who works in classrooms at any level knows the importance of the materials which are designed for the use of students. Teachers have searched for quality learning materials for years—and the search continues.

Until the fairly recent past, the textbook was the major learning device (it continues to be a basic tool), supplemented occasionally by the resourceful teacher with a film or filmstrip. The amount of material available was limited, but quality was a basic concern then, just as it is today. The search for quality has been complicated in recent years by the sheer quantity of materials which is available now. The growth in the amount of materials available was stimulated by a very significant period in the history of curriculum development: the curriculum reform movement.

The Curriculum Reform Movement

The Curriculum Reform Movement occurred approximately during the 1960-1970 decade.[1] It was designed to bring about long overdue basic changes within the curriculum of precollegiate education. The thrust of the movement was to renovate and, in some cases, replace the traditional curriculum by introducing new content, new processes, new materials, and new teaching-learning techniques.

Several factors contributed to the impetus of this movement. First, the launching of Sputnik in 1957 gave rise to a reassessment of the goals and achievements of the public schools. This reassessment was not a particularly positive one. New goals and changes were identified and demanded by various segments of the American public. Such demands of schools were easily linked to national defense since at the time our na-

[1] For a more extensive history of this decade, see, for example: John I. Goodlad with Renata Von Stoephasius and M. Frances Klein. *The Changing School Curriculum.* New York: Fund for the Advancement of Education, 1966; John I. Goodlad. *School Curriculum Reform.* New York: Fund for the Advancement of Education, 1964; and Robert M. McClure. "The Reforms of the Fifties." In: *The Curriculum: Retrospect and Prospect.* Chicago: University of Chicago Press, 1971.

tional goals and progress were being rivaled by another nation. Both areas were found lacking.

Second, there was increasing dissatisfaction by the university scholars throughout the nation with the educational level of incoming students from the public schools. Their knowledge and skill were judged generally to be well below what should be possessed by students who had completed a high school education.

Another impetus to the movement was the tremendous expansion of the available knowledge. Knowledge in virtually every subject area has mushroomed at a staggering rate, and new fields have developed such as biophysics, nuclear medicine, and computer sciences. No longer is it possible for one person to learn what is available even within one single broad field. What was accepted today may be questioned and disproved tomorrow. Too many students were studying facts considered obsolete or insignificant by scholars in the disciplines. Therefore, it was believed that students must deal with the significant concepts and processes basic to a discipline, since these will not be as likely to change.

A fourth impetus contributing to the curriculum reform movement was the drive for civil rights by minorities in the United States. Through this movement, minority groups were gaining in their demands for quality education. "Separate, but equal" education was no longer legal. The melting pot theory was discarded as an educational function. Minority groups demanded that their cultures be recognized and be attributed as much worth and dignity as the mainstream culture in the curriculum. They wanted their cultures to be studied in the curriculum of our public schools and the general lack of recognition in learning materials of their contributions to the development of the nation was to be rectified. All learning materials were to portray minority groups in an honest, realistic, and positive manner in the narrative as well as in illustrations.

These four factors led to the realization that the existing curriculum was woefully inadequate in a number of ways. Further, the kinds of changes needed in the curriculum could not be met by another statement of goals, a new text, or more fragmented time allocations. The changes meant, among other things, large amounts of money being committed to planning new curricula which were to be significantly different than what was developed in the past. These funds were provided from three major sources: the national government, philanthropic foundations, and the private business sector. Without these resources the types of learning materials which were ultimately designed to implement the desired changes would never have been developed so extensively nor been disseminated so widely.

The curricula developed during this movement and in the years following it redefined not only the content to be included, but the teaching-learning techniques to be utilized and the type of learning materials to be used by students as well. The new approach to content included the basic concepts and processes which were thought to be essential to an understanding of the discipline. Through these, students were to gain insight into how biologists, physicists, mathematicians, and social scientists work. "Covering the text" was rejected as the basis of a curriculum. The curriculum projects emphasized such teaching and learning processes as inquiring, self-guided learning, discovery, hypothesizing, and individual study. Lecturing and other ways of transmitting the teachers' knowledge to the students were largely rejected in favor of having students discover knowledge and determine the meaning it has on an individual basis. The teacher was not the "fountain of wisdom," but was to be a learning facilitator and guide.

Each project begun during the curriculum movement developed its own original instructional materials designed to accomplish the desired goals of the projects. Most of these materials had several common characteristics. For example, few projects used a basic text as the single piece of learning material. Even those which did include a text usually had other materials in a variety of formats considered to be as basic to the project as the text. Many projects included slides, filmstrips, records, cassettes, and films as basic learning materials. Paperbacks, games, simulations, and copies of original documents and primary sources were often a part of the package.

All of the materials were designed to increase student involvement in the "stuff" of learning. The content was not predigested by the teacher. Rather, the materials and activities involved students in defining and resolving problems, hypothesizing, evaluating, synthesizing, classifying, and engaging in original research. The attempt was to get students to think for themselves.

Although the impact of the curriculum reform movement has not been as great as most people hoped it would be, it has contributed changes which are considered desirable by many. Precollegiate curriculum has been expanded to many areas never before included. Traditional content areas remained, but even they had new formats. The "new" math became available on film loops, in individualized kits and textbooks. Drill games and individualized worksheets, however, could still be found for the "old" math (which is coming back into greater favor). Reading materials became available in large classroom management systems, sets of paperbacks, and programmed workbooks. Subject areas new to the elementary and

secondary school curriculum became available in a variety of forms—Black studies, Chicano history, space science, archaeology, anthropology, human interaction, economics, sociology, oceanography, and probability theory. The learning materials for these new subject areas were as varied as those found in the traditional subject areas. The range of subject matter available to be included in elementary and secondary school curricula was increased literally from A to Z—anthropology to zoology. with much in between.

This opening up of the curriculum to new areas never before included in precollegiate education and the greater variety in the types of learning materials led to the tremendous quantity of materials now available. The new content areas added to the new objectives in curriculum required new learning materials. Also, new modes of teaching and learning required different types of learning materials to be available.

Most of the monies which funded the projects during the curriculum reform movement have now dried up and very large curriculum projects are much less common. New curriculum thrusts, however, continue to be identified as desirable. Values clarification, affective education, movement education, metrification, achievement competency training, transactional analysis, and death education are among the latest topics and processes for inclusion in the curriculum. Publishers continue to produce materials for these new thrusts with many of the same characteristics as those designed in the curriculum reform movement: fostering student involvement, using a variety of media, accommodating several learning modes, and appealing to many teachers and students.

The quantity of learning materials currently available on the market is almost staggering. Clearly, the classroom teacher can no longer complain about the lack of learning materials. Never before in the history of our educational system have we had such an abundance.

The Question of Quality

As one begins to examine this large quantity of materials, the question of quality will inevitably be raised. Resources available for determining the quality of materials were identified in Chapter 2 and research needed on the topic was suggested in Chapter 3. Three forces have contributed to the concern for quality in learning materials.

1. The large amount of available learning material is certainly one factor which has increased the concern about how "good" they are. The choices which can be made in learning materials in many curricular areas lead naturally to a consideration of which is best.

2. A second factor is the increasing decentralization of schooling. State departments of education are no longer the major agencies for the selection of learning materials as they often were in the past. The local school district, the school faculty, and the individual teacher are gaining significant power over the curriculum of the school and classroom and are making basic decisions about what learning materials will be used. The principal and teachers of a school are more likely to raise specific questions about how effective any learning materials will be with their particular students. Materials are no longer viewed as being acceptable for the masses, but are now being considered in relation to how well they meet the needs of specific teachers and students.

3. A third factor is the trend toward accountability in the United States. Ralph Nader has spearheaded a drive for many years to hold the automobile manufacturers more accountable for the safety and performance of cars. The Food and Drug Administration acts as a watchdog over the food and medicine available to the public. For several years, cyclamates have been banned as unsafe even though the debate continues as to the real effect they may have. More recently, red food dyes and saccharin have come under investigation as to their effects upon the human body. In Southern California, there have been strikes by doctors over the escalating costs of malpractice insurance. That doctors would strike has been unthinkable by many citizens and yet they have done so. The Better Business Bureau advertises that consumers may bring in their grievances against businesses and have them investigated for possible action to correct any illegal transactions. These are only selected examples of the strong trend of accountability which is prevalent today in the American society. The trend toward accountability is also being applied to learning materials. Much of the controversy over learner verification and revision discussed in Chapter 3 is directly related to this.

The Future

The factors identified in the preceding discussions are in the past. They have had a direct influence upon the learning materials available for use in the learning process. The future of the field is being molded in part by what is occurring now. Few would question the importance of learning materials; they are extremely basic to the educative process. By studying what has happened in the past and by analyzing carefully what actions are being proposed or taken now, learning materials of the future can become more plentiful and of a better quality than educators ever dreamed of a few years ago. This will not occur, however, without efforts on the

part of concerned people: educators, publishers, students, and many interested lay citizens. These efforts should bring about the further creation of a very valuable asset in the education of the young people of the nation: learning materials of higher and better quality.

Appendix A*

"Selecting New Aids to Teaching"
Richard I. Miller

The purpose of this document is to present specific and realistic guides that can assist local school officials in making better decisions about instructional units. Guidelines developed in this report should assist in making decisions about a wide variety of these units, such as: (a) School system "X" has made a decision to revise its elementary social studies program, and it has decided to purchase a sequenced set of books. How will the selection be made from among the various offerings? Or, (b) School system "Y" has decided to investigate a computer-assisted instructional system for possible purchase or rental. What factors should be considered in reaching a decision?

The rise of instructional units is self-evident, and their increase can be expected to continue—at an accelerated rate. "Instructional units" may include a number of related items, usually purchased as an entity. These may range in complexity from such items as a language laboratory, multimedia study carrel, or computer-assisted instruction, to a series of primary readers or a series of mathematics books. A single textbook normally would not constitute such a unit.

This report is based upon four assumptions:

- Increasingly, the local decision makers are faced with the task of selecting and curricularizing instructional units rather than beginning from scratch and designing them.

- The units are becoming increasingly complex and sophisticated, requiring more study and more assistance in their appraisal.

- The instructional units usually require a substantial financial outlay and usually will need to be used over a period of several years; therefore, careful consideration of these decisions becomes more essential than ever. Also, a growing tendency for local communities to reject increased taxation is turning school officials toward better utilization and accountability procedures.

- Local school officials need specific guidelines to assist them in reaching educationally sound decisions about such units.

The procedure suggested here assumes that an initial decision has been made to investigate one or more instructional units. These guides do not hold for conducting a general survey of what needs to be done—commonly called a "needs assessment."

* The inclusion of "Selecting New Aids to Teaching" as Appendix A is not an endorsement by the author of this booklet. It is included here as a service to readers by ASCD since the publication is now out of print. Reprinted from: Richard I. Miller. *Selecting New Aids to Teaching.* Washington, D.C.: Association for Supervision and Curriculum Development, 1971. 31 pp. © ASCD 1971.

The checklist in this report is presented in a sequential manner. In some circumstances, however, those in charge of the unit appraisal may want to "plug in" at various points rather than follow the overall sequence. For example, state regulations or school board decisions may mandate that certain kinds of action be taken; or in some situations there is current emphasis, interest, or popularity and/or money available to institute a particular innovation;[1] or a school system may be instituting innovations as part of a long-range plan. In these cases, one or several sections in this report would be superfluous.

Specific guidelines are developed for these general areas:

1.0 Initial probing of proposed unit
2.0 Developing a plan of action
3.0 Accomplishing the plan
4.0 Decision
5.0 Revision and recycling

The remainder of the report focuses on these areas in numerical order.

1.0 Initial Probing of Proposed Unit

Before moving into a detailed plan for assessing the instructional unit, initial consideration should be given to whether the subsequent effort is likely to result in success, asking:

1.1 Is the unit really needed?

1.2 What are its anticipated accomplishments?

1.2.1 More effective learning
1.2.1.1 What specifically?
1.2.2 Greater economy or more efficiency
1.2.3 Better teaching
1.2.4 Stronger community support
1.2.5 Greater receptivity to change
1.2.6 Better morale
1.2.7 Other

1.3 Does the unit represent the best alternative available to achieve stated objectives? (For instance, will $40,000 for purchase or $1,000 per month for lease of a "talking typewriter" result in better reading than putting the same amount into teacher aides or other procedures?)

1.4 At this point, what major obstacles and problems can be anticipated?

1.4.1 Are they surmountable?

1.5 Preliminary decision

1.5.1 Completely abandon further probing

[1] "Innovation" is defined as a new or different unit that is under consideration. If accepted, a systematic introduction into the classroom, school, or school system is planned.

1.5.2 Shelve further probing; reopen when timing is more appropriate

1.5.3 Continue, on a limited basis

1.5.4 Continue, full scale

1.5.5 Seek more evidence before decision is made

2.0 Developing a Plan of Action

The first step is to develop a plan of action, assuming that a decision has been made to undertake a more extensive investigation. Since the unit to be analyzed may represent a sizable investment of school money, a fairly well-defined plan is highly desirable in order that the study be as effective and as efficient as possible. The plan can be a sophisticated system such as a PERT model,[2] or it can be a small number of steps with some minimum structure. Those developing the plan of action need not become enamored of complicated classification systems if the problem and circumstance do not warrant it.

The plan should ask these questions:

2.1 *What,* specifically, is the purpose of the investigation of the proposed unit?

2.2 *Who* should be involved?

2.3 *When* should the investigation take place?

2.4 *How* should it be undertaken?

Some elaboration on each of these four points follows:

2.1 What, specifically, is the purpose of the investigation of the proposed unit?

For example, is it to compare a new set of basic readers with what the school already has; is it comparative in terms of alternative instructional approaches; is it to determine the effectiveness of a language laboratory in a specified situation?

2.2 Who should be involved?

Eight groups should be considered. Not all eight need to be involved, but the consideration of these groups will serve to reduce the possibility of leaving out significant ones.

2.2.1 Classroom teachers

2.2.2 Curriculum workers

2.2.3 Professors who are subject matter specialists

[2] Essentially, the fundamental concept underlying PERT (Program Evaluation and Review Technique) is that an ordered sequence of events to be achieved must be created. PERT may be said to consist of four principles: (a) It is an orderly and consistent plan at all levels, using the same form and basic philosophy. (b) It is a compulsory plan. It forces everyone to plan on something other than the back of an old envelope. (c) It is an integrated method of showing, in visual form, a plan which depicts all interrelationships and interdependencies of planned efforts in all areas and at all levels of personnel. (d) It is adaptable, providing for use of graphic or visual method of assimilating huge amounts of detail and presenting it in a form useful for decision making. (Edwin D. Smith. "The Use of PERT in Education." In: Don Morrison, editor. *Proceedings of the Ninth College and University Machine Records Conference.* New York: Educational Systems Corporation, 1964. p. 153.)

2.2.4 Professors who are pedagogical specialists
2.2.5 School administrators
2.2.6 Citizens
2.2.7 Students
2.2.8 Consultants

Involvement should include several individuals who will be representatives of the target audience for the unit. For example, if the unit under consideration is the multimedia, individualized study carrel, secondary school teachers should be involved.

2.3 When should the investigation take place?

Timing both in terms of "when" and "how long" should be a consideration, with a number of questions being raised, such as: When is the optimum time to begin? to end? How long should the investigation take? How will it affect workloads of participants?

2.4 How should it be undertaken?

2.4.1 Is the use of committees or task forces considered in conjunction with the innovation?
2.4.1.1 Can assignments be made to those with greatest competence?
2.4.1.2 Can assignments be given realistic timetables and tasks?
2.4.2 Are visitations to other school systems or demonstration sites scheduled?
2.4.2.1 Will these visitations be carefully planned (objectives of visit, targets, evaluation, follow-up)?
2.4.3 How will consultants or other specialized personnel be employed?
2.4.4 Specifically, *who* is to do *what, when?*

3.0 Accomplishing the Plan

The plan of action is ready for implementation. As mentioned earlier, the degree of complexity of the plan may vary considerably, from a PERT-like model to a small number of simple steps, but some prepared plan of action is a *must* for making effective and efficient decisions about instructional units.

The plan should focus upon the unit that is the center of attention, attempting to analyze it from a number of perspectives. These are:

3.1 Objectives of the unit: those of the producer as well as yours
3.2 Relevance and validity of unit's content
3.3 Compliance of unit with principles of human growth and development
3.4 Time and space (organizational) considerations
3.5 Personnel factors
3.6 Community factors
3.7 Cost analysis of the unit
3.8 Instructional and curricular factors
3.9 Evaluative procedures

3.10 Dissemination

3.11 Implementation

3.1 Objectives of the unit: those of the producer as well as yours

This step calls for identifying objectives of the unit. It is necessary in order to determine (a) whether the claimed objectives stand up under careful scrutiny, and (b) whether the claimed objectives are pertinent to the local situation.

3.1.1 What objectives do the producers give for their innovation? In other words, what do they say it will accomplish?

3.1.1.1 Do they have adequate research to support their claims?

3.1.1.2 Do these objectives seem reasonable and meaningful for *this* school/system?

3.1.2 What steps are taken by the producers to provide adequate knowledge about innovation for those who need it?

3.1.3 What objectives does your school system have for the unit? (What does your committee believe it should accomplish?)

3.1.4 What *compatibilities* do you discern between the producer's objectives and yours?

3.1.5 What *differences* do you find between the producer's objectives and yours?

3.1.6 How do *compatibilities* balance with *differences?*

3.1.7 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

One cannot always assume that the school objectives are superior to those of the producer. In some cases, school officials would do well to spend the time that commercial producers of units have taken in working out objectives.

3.2 Relevance and validity of unit's content

Prompted by the "knowledge explosion," an unprecedented number of large-scale (or so it seems) curriculum studies have been undertaken, beginning with the Physical Sciences Study Committee (PSSC) in 1956. These studies have had three general characteristics: (a) They have utilized the team approach, combining academic scholars, college professors of education, classroom teachers, and others; (b) they have built their materials around the conceptual or broad theme approach, asking the same basic question that Herbert Spencer asked in 1848: "What knowledge is of most worth?" and (c) they have emphasized self-directed student learning or the discovery approach.

The following questions might be considered:

3.2.1 Is the content in step with modern facts and concepts in the area?

3.2.1.1 Does the organization of content follow some conceptual model that is consistent with the area?

3.2.1.2 Does the content allow sufficient opportunity for student discovery and independent study?

3.2.1.3 Is the learning level of content appropriate for the target audience?

3.2.1.4 Is the content historically accurate and relevant to its proposed setting?

3.2.1.5 Do the materials have student appeal?

3.2.1.5.1 How do you know?

3.2.1.5.2 Have students in your schools tried them?

3.2.1.5.2.1 Should a student *ad hoc* committee be established to examine the innovation?

3.2.1.5.2.2 Should a pilot study be designed?

3.2.1.6 What procedures have the producers employed for content validation?

3.2.1.6.1 Do these seem adequate?

3.2.2 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.3 Compliance of unit with principles of human growth and development

A great number of traditional principles of human growth and development are obsolete, and many textbooks in educational psychology are outdated before they are published; yet we do know some things about human growth and development. Application of this section probably calls for consultative assistance, or someone who is knowledgeable and current about these matters.

3.3.1 What assumptions about learning are made by the unit?

3.3.2 What assumptions about motivation are made by the unit? For example, does the innovation provide intrinsic or extrinsic motivation for the student?

3.3.3 Is there any evidence of the unit's motivational impact on target audiences?

3.3.4 What assumptions are made about the learner?

3.3.4.1 Are these assumptions theoretically sound?

3.3.4.2 Have they been tested by research?

3.3.5 Is "hard" conclusive evidence available to indicate that learning will be improved over what is now achieved?

3.3.5.1 What are experiences of other school systems?

3.3.5.2 Have pilot studies been designed or could they be designed to secure local data to predict the consequences of adoption?

3.3.6 Which of the intellectual processes cited in Bloom's *Taxonomy of Educational Objectives Handbook I: Cognitive Domain* will most likely be developed by this innovation?

3.3.6.1 Knowledge

3.3.6.2 Comprehension

3.3.6.3 Application

3.3.6.4 Analysis

3.3.6.5 Synthesis

3.3.6.6 Evaluation

3.3.7 How might this material affect students with major *affective* or psychomotor difficulties?

3.3.8 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.4 Time and space (organizational) considerations

"Organization" refers to the way that teachers and pupils are brought together so that learning can happen. The organizational matrix considers *time* and *space*.

"Time" refers to the duration and sequence of blocks of time devoted to the subjects taught and to the system for moving students upward.

"Space" divides students among teachers.

3.4.1 Is the innovation designed with any particular time and space requirements in mind?

3.4.2 Do *time* requirements of the innovation sufficiently mesh with those of the school system?

3.4.3 Is school equipment adequate for the requirements of the unit?

3.4.4 Are school facilities adequate?

3.4.5 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.5 Personnel factors

It is false economy to purchase any new unit without careful consideration of personnel factors. For example, many innovations have floundered and failed through inadequate attention to the individuals who will be introducing and teaching them. More specifically, classroom teachers need to be involved right from the beginning if the unit is related to their work.

3.5.1 Does the school and/or school system have the professional skills necessary for the innovation?

3.5.1.1 If not, what provisions can be made for teacher retraining?

3.5.2 Should administrators have retraining also?

3.5.3 Can provisions for retraining, if needed, be made on a continuing basis?

3.5.4 To what extent should proficiency with this unit be a factor in hiring new personnel?

3.5.5 Can present professional personnel be sufficiently convinced of expected gains so that they will profit from retraining?

3.5.6 Will the unit require the use of consultants?

3.5.6.1 At what points?

3.5.6.2 Where can they be found?

3.5.6.3 What will their services cost?

3.5.7 What are the dominant characteristics of the student body, and to what extent are these characteristics related to the unit under study?

3.5.7.1 Socioeconomic levels

3.5.7.2 Achievement levels

3.5.7.3 Motivational levels

3.5.7.4 Is the size of the student body compatible with innovation?

3.5.7.5 Are students to be used in the testing or verification procedures?

3.5.8 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.6 Community factors

Schools exist in an economic, social, religious, and political milieu, and several aspects of these realities may need to be considered carefully in making decisions about instructional units.

3.6.1 Will the unit be relevant not only to the instructional goals that it will seek to achieve but also to the entire climate into which it would be introduced?

3.6.2 What political realities of the community need to be considered?

3.6.3 What are the economic considerations for the community?

3.6.4 Is the unit likely to be accepted by the community?

3.6.5 Is the unit likely to be accepted by the school board?

3.6.6 To what extent should community members be involved in the decision-making process?

3.6.6.1 Which members?

3.6.6.2 At what points?

3.6.7 How should the involvement be approached?

3.6.8 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.7 Cost analysis of the unit

The introduction of almost any type of unit eventually faces a dollar-evaluation. In some cases, educators have purchased false economy with the lowest bidder competition. School officials need to wage a continuing educational campaign against the tendency of many citizens to place economy above all else. The highest priority is effective learning, achieved with optimum economy.

3.7.1 Can the school system and the community afford both the *initial* and *ongoing* expenses?

3.7.2 Is adequate technical assistance available in case of malfunction and/or for regular maintenance?

3.7.2.1 Can this expense be estimated? (What have other school systems found?)

3.7.2.2 How will maintenance expenses change the overall cost factor?

3.7.2.3 Can school personnel learn this maintenance function?

3.7.3 How does the preferred unit compare with the nearest competing unit in cost and in expected results?

3.7.3.1 Is the one that is initially most economical also the same in the long run?

3.7.4 Does the expenditure for this unit represent the wisest investment of funds in terms of classroom learning?

3.7.4.1 Would more effective classroom learning result from selecting another type of unit? (For example, would more effective learning result from teaching machines or from teacher aides?)

3.7.5 Should the cost of the unit replace some existing expenditure?

3.7.6 Is the unit economical in terms of length of effective use intended?

3.7.6.1 Is it economical in terms of cost per pupil for the length of time needed to accomplish goals set for the unit?

3.7.7 Will expected improvements in learning be sufficient to justify the time and expense that may be involved in retraining or hiring personnel?

3.7.8 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.8 Instructional and curricular factors

A number of general instructional and curricular issues need to be considered, but they do not seem to fit into any of the other categories.

3.8.1 To what extent does the unit make a meaningful contribution toward greater individualization of instruction?

3.8.1.1 What is the basis of your judgment?

3.8.2 To what extent does the innovation utilize and/or build on existing instructional resources?

3.8.2.1 Can the innovation be linked to the existing program? Should it be?

3.8.3 Can the intended outcomes of the innovation be transferred from grade to grade and from subject to subject?

3.8.4 What, if any, limitations will the unit's installation impose upon the school organization? Or does it add new flexibility?

3.8.5 Can the material be adapted to individualized instruction, independent study, large-group presentation, small-group presentation, small-group discussion, and laboratory experiences?

3.8.5.1 To which ones most effectively?

3.8.6 Can it be used in interdisciplinary or multidisciplinary approaches as opposed to discipline teams or self-sufficient classrooms?

3.8.7 What evidence about the unit is available from school systems that have used it?

3.8.7.1 What other factors need to be taken into consideration in this assessment? (Some of these are size, specific needs of system, nature of students, type of school, and so forth.)

3.8.8 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.9 Evaluative procedures

This section refers to evaluative procedures that can be developed for the unit to help determine whether—after installation—its objectives are being accomplished.

Too often "evaluative procedures" are not considered when the unit is being studied, presumably based upon the assumption that if the unit is selected and implemented, it will automatically "do good." *This easy way out constitutes one of the greatest weaknesses in U.S. education: namely, inadequate evaluation.* We need to make some judgments about the procedures for evaluating the unit during the initial study of its potential effectiveness. If reasonably effective evaluation of the unit appears to be a major obstacle, then this future difficulty should weigh significantly in accepting or rejecting the unit.

Evaluation too often is considered only as a final judgment, such as a final grade in a college course. The modern concept of evaluation looks upon evaluation as countless judgments along the way in much the same way that huge rockets are given directional guidance by a computer from the first instants after blast-off. Evaluation, then, becomes a vital input into the decision-making process, providing feedback data that allow corrections to be made along the way. This concept of evaluation, however, requires more planning and coordination than the old "act-and-hope" approach. The following questions are designed to assist the committee in determining whether, and how, reasonably effective evaluation can become an integral part of the unit:

3.9.1 Do you have expertise in evaluation on your study team?
- 3.9.1.1 If not, how can it be secured?

3.9.2 What kinds of evaluation would seem most appropriate for the unit under consideration?
- 3.9.2.1 Experimental designs
  - 3.9.2.1.1 Single measurement
  - 3.9.2.1.2 Pre- and post-test
  - 3.9.2.1.3 Control group
  - 3.9.2.1.4 Pre- and post-test plus control group
  - 3.9.2.1.5 Quasi-experimental design
  - 3.9.2.1.6 Other
- 3.9.2.2 Judgments of consultants
- 3.9.2.3 Judgments of:
  - 3.9.2.3.1 Teachers
  - 3.9.2.3.2 Students
  - 3.9.2.3.3 Parents
  - 3.9.2.3.4 School officials
  - 3.9.2.3.5 Citizens
  - 3.9.2.3.6 Other
- 3.9.2.4 What techniques will be used for collecting data?
  - 3.9.2.4.1 Standardized tests
  - 3.9.2.4.2 *Ad hoc* tests

3.9.2.4.3 Questionnaires
3.9.2.4.4 Interviews
3.9.2.4.4.1 If used, is special training planned?
3.9.2.4.5 Ratings
3.9.2.4.6 Audio or visual records
3.9.2.4.7 Case studies
3.9.2.4.8 Checklists
3.9.2.4.9 Judgments
3.9.2.4.10 Classroom interaction devices for analyzing behavior
3.9.2.5 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

As a footnote, one needs to approach the task of evaluation with open-minded humility. We should have no illusions about the primitive state of the art and science at this point. On the other hand, we do know much more about evaluation than we knew five years ago, and we are improving all the time.

3.10 Dissemination

Dissemination is defined as a systematic process for passing along information about the unit, with the expectation that the target audience will be interested or can be persuaded to participate in the unit. In essence, a study of dissemination should consider: *Who* should be the target audience, *how* should they be involved, and *what* do they need to know (skirting between too little and too much information)?

3.10.1 If the unit is adopted, *who* should use it?

Presumably the decision to accept, reject, etc., the unit will be made by a small, select group. This decision should include steps in spreading the dissemination to the next circle of educators. For instance, is the unit going to be on a trial or experimental basis for a few schools? If so, which ones? Such decisions need to be considered in the decision-making process and not after it.

3.10.2 *How* should the target clientele be involved?

In other words, in what ways will the target clientele be involved, and to what extent?

3.10.2.1 Workshops
3.10.2.2 Lectures
3.10.2.3 Memoranda
3.10.2.4 Faculty meetings
3.10.2.5 Self-study
3.10.2.6 Demonstrations
3.10.2.7 Other

3.10.3 *What* does the target audience need to know?

Some innovations have failed because teachers were required to know too much, or at least to have knowledge different from their basic professional preparation.

3.10.4 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

3.11 Implementation

Some attention should be given in the decision-making process to how the unit will be implemented—placed in an operational context, either in a regular or in an experimental program. At this point, future difficulties should be considered. Some instructional units will be unacceptable simply because the situation is not ripe, or the students or teachers are not ready.

3.11.1 What factors should be considered as one thinks ahead to implementation?

3.11.1.1 Can the unit be successfully implemented in the environment for which it is intended?

3.11.2 Has the timing of implementation been considered?

Timing is important not only in terms of dates when budgets are due and expenditures must be made, but also in terms of the degree of readiness of staff and other personnel to use the new unit. It would be rather foolish, for example, to propose videotape material in the school when the faculty was upset over some particular experience with educational television.

3.11.3 What other problems and/or obstacles should be considered?

3.11.3.1 How serious are they?

3.11.3.2 What procedures can be developed to overcome them?

3.11.4 How is implementation to be facilitated?

3.11.4.1 Workshops

3.11.4.2 Special lectures

3.11.4.3 Memoranda

3.11.4.4 Demonstrations

3.11.4.5 Other

3.11.5 Can funds be made available for implementation?

3.11.6 Abort consideration. Is the probe worth continuing, based upon what is known at this point?

4.0 Decision

If no "abort" decision is reached by this time, a final decision is now in order. This process may be simple or complex, depending upon the variety of circumstances that will be unique to any particular problem.

4.1 Who will make the decision?

Decisions may be categorized into either *policy* or *operational*, with different parties involved in each dimension. In most cases, the decision is operational, such as the purchase of the AAAS *Science—A Process Approach*. In some cases, however, where large sums of money are involved and a large, new program is being considered, a policy decision will be needed.

4.1.1 Policy decision

4.1.1.1 School board

4.1.1.2 Superintendent
4.1.1.3 Curriculum director/supervisor
4.1.1.4 Principal
4.1.1.5 Teacher
4.1.1.6 Student

4.1.2 Operational decision
4.1.2.1 Superintendent
4.1.2.2 Curriculum director/supervisor
4.1.2.3 Principal
4.1.2.4 Teacher
4.1.2.5 Student

4.2 How long should be allowed for the final decision?

4.3 What decision will be made?

4.3.1 Full purchase/rental
4.3.2 Provisional trial
4.3.3 Very limited purchase/rental
4.3.4 Postponement of decision until more evidence is obtained
4.3.5 Postponement of decision until climate is better
4.3.6 No purchase/rental

5.0 Revision and Recycling

Unexpected problems may interfere with implementation after a positive decision has been made on the unit under consideration. Factors such as lack of staff availability, unexpected costs, and unanticipated obstacles may force adjustments at the time of implementation or, indeed, in rare cases a reconsideration of the decision itself.

Most innovations are introduced with an unspoken sense of finality. Rarely are provisions made for revision and subsequent recycling. All educational innovations should be subjected to periodic reviews. This final section asks several questions on this matter.

5.1 What plans are made for a systematic evaluation of the ongoing innovation?

5.2 What provisions are made for basing revisions upon these evaluations?

5.3 Who is to do the ongoing evaluation?

5.4 Are sufficient funds available for it?

To some, the process for decision making outlined here may seem unnecessarily long and complex, and in some instances a simplified version would be preferable. Yet, *in most instances,* the process of making decisions about instructional units suffers because of oversimplified and inadequate procedures. We simply need to do better than we are doing in this matter. Hopefully, the procedure outlined here can be of use in this respect.

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